

EXHIBIT 1

**UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF MASSACHUSETTS**

SINGULAR COMPUTING LLC,

Plaintiff,

v.

GOOGLE LLC,

Defendant.

Civil Action No. 1:19-cv-12551 FDS

Hon. F. Dennis Saylor IV

**SUR-REPLY TO MOTION TO EXCLUDE CERTAIN TESTIMONY OF LAURA B.
STAMM AND DR. MARTIN WALKER REGARDING REASONABLE ROYALTY**

Singular moved to exclude Google’s reliance on the number format that Dr. Walker labeled as “bfloat20” (or “bf20”) as an available non-infringing alternative because Google allegedly did not disclose that format during fact discovery. Mot. at 3. Google’s Opposition demonstrated—and Singular’s Reply concedes—that Google disclosed the bf20 format as one of multiple available non-infringing alternatives during fact discovery. *See* Reply at 1, 5. That concession alone should resolve Singular’s motion.

Singular’s Reply now insists that, although Google’s interrogatory response identified a limited group of number formats that included bf20, Google did not specify that it would rely on the bf20 format “at trial” or detail the related mathematical analysis in its interrogatory response. *See, e.g., id.* at 1, 3. As explained below, Singular’s new Reply arguments should be rejected for multiple reasons.

First, Singular’s Reply argues that Google’s interrogatory response was deficient because it posited “a vague range of number formats” from which Singular could not ascertain the bf20 number format that Google and its experts “planned to rely on *at trial*.” *Id.* at 1. What Singular ignores, however, is that its interrogatory asked Google to “[i]dentify *any* products or processes that [Google] contend[s] are *acceptable non-infringing alternatives*.” Dkt. 510 (Kamber Decl.), Ex. E. at 10 (emphases added). In response, Google identified a range of number formats whose use could be acceptable as non-infringing alternatives, a limited group of number formats that both parties agree included the number format that Dr. Walker and Ms. Stamm rely on—what they refer to in their reports with the label “bf20.”¹ *See* Opp. at 3-8; Reply at 1, 5; *infra* at 3-5.

¹ Because Google disclosed the number format that its experts are now relying on and there is no dispute that Google’s disclosure encompassed the bf20 format, it does not matter that Google’s response did not disclose the nomenclature that Google’s experts are now using. Indeed, there is no consistent nomenclature for the number format that Dr. Walker labels bf20; those in the industry (including Singular in its own patents) refer to number formats with the same type of

Similarly, although Singular says that Google’s Rule 30(b)(6) witness “did not mention a ‘bf20’ non-infringing alternative,” Singular did not ask this witness about Google’s interrogatory response on non-infringing alternatives, about all potential alternatives, or even which of the numerous disclosed number formats that Google might rely on at trial.² Reply at 2.

Second, Singular’s new Reply arguments fail because Singular cannot meet the high standard for Rule 37 preclusion. As Singular itself argued when Google moved to strike portions of Dr. Khatri’s report, a preclusion analysis under Rule 37 requires courts to engage in a multi-factor analysis. *See* Dkt. 423 at 6. For Rule 37 preclusion “courts should consider: (1) any justification for the late disclosure; (2) the opponent-party’s ability to overcome the late disclosure’s adverse effects; (3) the party’s history of any litigation abuse; (4) the party’s need for the evidence; and (5) the impact on the district court’s docket.” *Id.* (referencing *Glass Dimensions, Inc. v. State Street Bank & Trust Co.*, 290 F.R.D. 11, 17 (D. Mass. 2013) (citing *Harriman Hancock Cty.*, 627 F.3d 22, 30 (1st Cir. 2013))). Singular has not even attempted to address this multi-factor standard here.

Further, as Singular previously argued, preclusion of evidence under Fed. R. Civ. P. 37, “. . . is an ‘onerous sanction’” and “disfavored as akin to an excessive ‘death penalty’ form of

description as Google’s interrogatory response (*i.e.*, in ranges based on the number of mantissa and fraction bits). And Singular’s Reply effectively concedes that there is no standard nomenclature for such number formats. *See* Reply at 2. In any event, Google was not required to disclose every detail of its experts’ opinions during the fact discovery stage. *See infra* at 4-5.

² As the transcript shows, Singular only asked specific questions about GPU systems but did not seek information related to the use of alternative number formats with TPUs that Google provided in its interrogatory response. *See, e.g.*, Dkt. 466-2, Ex. K (excerpts from Patil Deposition showing that Singular did not seek any specific information about Google’s non-infringing alternative interrogatory response or the number formats disclosed within, including bf20).

relief.” Dkt. 423 at 6-7 (quoting *Santiago-Diaz v. Laboratorio Clinico y de Referencia del Este*, 456 F.3d 272, 276 (1st Cir. 2006); *BRT Mgmt.LLC v. Malden Storage, LLC*, No. 17-10005-FDS, 2019 WL 3936862, at *3 (D. Mass. Aug. 20, 2019)). Here, it is clear that the “onerous” sanction of preclusion that Singular now seeks is not warranted under Rule 37. At the outset, Google’s disclosure was not late (as Singular now concedes); Google served its interrogatory response disclosing the group of number formats including bf20 **before** the close of fact discovery and **before** the deposition of any relevant Google witness.³ See Opp. at 6-8.

Third, Singular cannot claim prejudice warranting preclusion as a result of Google’s reliance on the number format labeled bf20, because there is no dispute that Singular and Google both understood that this particular number format was non-infringing. See Opp. at 6-13. Singular’s patents and Dr. Khatri’s report show that Singular understood that number formats in the limited class of number formats that Google disclosed (including the one now labeled bf20) would not infringe under Singular’s infringement theory. Indeed Dr. Khatri’s report has a chart confirming that fp16—a number format with 10 mantissa bits—does not support “low precision” under his analysis.

	Length (bits)	Dynamic Range	Precision	Satisfies Claim?
FP32	32	High	High	×
FP16	16	Low	High	×
BF16	16	High	Low	✓

³ Singular’s Reply citations to *Pelican Int., Inc. v. Hobi Cat Co., C.A.* No. 20-cv-02390, 2023 WL 2127995 (S.D. Cal. Feb. 10, 2023), are inapposite. *Pelican* involved the complete lack of disclosure of the specific non-infringing alternatives, not the sufficiency of any such disclosure. *Id.* at *12-14.

Dkt. 510-1 (“Khatri Rpt.”) ¶ 108; *see generally* Khatri Rpt. ¶¶ 104-108 (noting that the fp16 number format “has more precision than bf16 (because fp16 has 10 mantissa bits while bf16 has 7),” and thus fp16 would not infringe). In light of Dr. Khatri’s analysis here regarding fp16, Singular cannot legitimately dispute that it did not know that using the alternative bf20 format (which has one more mantissa bit than fp16) would result in more precision than fp16. Furthermore, the patent specification itself refers to the possibility of number formats with more than 10 mantissa bits being non-infringing. *See* Dkt. 510-2 (’273 Patent) at 6:6-8 (stating that infringing floating-point values “would have binary mantissas of no more than 10 bits plus a sign bit and binary exponents of at least 5 bits plus a sign bit”). Thus, Singular cannot reasonably claim prejudice here.

Fourth, although Singular’s Reply attempts to claim otherwise, Google was not required to disclose its trial strategy or its expert analysis as part of fact discovery. Singular’s interrogatory asked Google to identify *any* available alternatives (not the alternatives Google might rely on at trial), which Google did. If Singular believed that Google’s interrogatory disclosure was insufficient, Singular should have addressed this issue during discovery. *See, e.g., Steady State Imaging, LLC v. Gen. Elec. Co.*, No. 017CV01048JRTKMM, 2018 WL 2047578, at *14-15 (D. Minn. May 2, 2018) (holding that the “failure to even attempt to alleviate the prejudice [during discovery] that [the moving party] now claims to have suffered weighs strongly against” preclusion). Similarly, with regard to mathematical analysis underlying the use of bf20 as a non-infringing alternative, Google did not need to “describe, in detail, the basis for its contention that [an alternative] is non-infringing” during fact discovery, because Google “is not required to provide expert opinion testimony until that [expert discovery] deadline.” *Maxell v. Apple*, No. 5:19-CV-00036-RWS, 2019 WL 7905454, at *6 (E.D. Tex. Nov. 13, 2019). In fact,

Google’s objections to Singular’s interrogatory noted that the interrogatory “prematurely seeks the disclosure of expert analyses and opinions,” and Singular did not address this objection during fact discovery either. Moreover, Singular has not suffered any prejudice here because Google “was not required to disclose the details of the analysis its experts would subsequently rely upon” and Singular “had a full and fair opportunity to inquire into the details of these [] opinions during expert discovery.” *Genband US LLC v. Metaswitch Networks Corp.*, No. 2:14-CV-33-JRG-RSP, 2016 WL 122969, at *2-3 (E.D. Tex. Jan. 9, 2016).

In sum, Singular’s new Reply arguments provide no basis to strike Google’s expert testimony relying on bf20 as a non-infringing alternative and its motion should be denied for all the reasons stated in Google’s Opposition and this Sur-reply.

Respectfully submitted,

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